

SEQUENCE LISTING

<110> Merck Patent GmbH

<120> DNA SEQUENCE AND PREPARATION OF GRASS POLLEN ALLERGEN Ph1 p 4

<130> MERCK-2966

<140> US 10/518,927

<141> 2004-12-23

<150> PCT/EP2003/006092

<1511> 2003-06-11

<160> 52

<170> PatentIn version 3.1

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Asp Asn Val Lys Pro Ile Tyr Ile Val Thr Pro Thr Asn Ala Ser His
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 Pro Ser Val Leu Gly Gln Thr Ile Arg Asn Ser Arg Trp Ser Ser Pro
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Asp Asn Val Lys Pro Ile Tyr Ile Val Thr Pro Thr Asn Ala Ser His
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Leu	Gly	Glu	Leu	Tyr	Tyr	Ala	Ile	Tyr	Lys	Ala	Ser	Pro	Thr	Leu	Ala	
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Gly	Glu	Ser	Phe	Gly	Ile	Val	Val	Ala	Trp	Gln	Val	Lys	Leu	Leu	Pro	
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gtg	ccg	ccc	acc	gtg	aca	ata	ttc	aag	atc	tcc	aag	aca	gtg	agc	gag	720
Val	Pro	Pro	Thr	Val	Thr	Ile	Phe	Lys	Ile	Ser	Lys	Thr	Val	Ser	Glu	
225					230					235					240	
ggc	gcc	gtg	gac	atc	atc	aac	aag	tgg	caa	gtg	gtc	gcg	ccg	cag	ctt	768
Gly	Ala	Val	Asp	Ile	Ile	Asn	Lys	Trp	Gln	Val	Val	Ala	Pro	Gln	Leu	
				245					250					255		
ccc	gcc	gac	ctc	atg	atc	cgc	atc	atc	gcg	cag	ggg	ccc	aag	gcc	acg	816
Pro	Ala	Asp	Leu	Met	Ile	Arg	Ile	Ile	Ala	Gln	Gly	Pro	Lys	Ala	Thr	

260					265					270						
ttc	gag	gcc	atg	tac	ctc	ggc	acc	tgc	aaa	acc	ctg	acg	ccg	ttg	atg	864
Phe	Glu	Ala	Met	Tyr	Leu	Gly	Thr	Cys	Lys	Thr	Leu	Thr	Pro	Leu	Met	
275					280					285						
agc	agc	aag	ttc	ccg	gag	ctc	ggc	atg	aac	ccc	tcc	cac	tgc	aac	gag	912
Ser	Ser	Lys	Phe	Pro	Glu	Leu	Gly	Met	Asn	Pro	Ser	His	Cys	Asn	Glu	
290					295					300						
atg	tca	tgg	atc	cag	tcc	atc	ccc	ttc	gtc	cac	ctc	ggc	cac	agg	gac	960
Met	Ser	Trp	Ile	Gln	Ser	Ile	Pro	Phe	Val	His	Leu	Gly	His	Arg	Asp	
305					310					315					320	
gcc	ctc	gag	gac	gac	ctc	ctc	aac	cgg	aac	aac	tcc	ttc	aag	ccc	ttc	1008
Ala	Leu	Glu	Asp	Asp	Leu	Leu	Asn	Arg	Asn	Asn	Ser	Phe	Lys	Pro	Phe	
325					330					335						
gcc	gaa	tac	aag	tcc	gac	tac	gtc	tac	cag	ccc	ttc	ccc	aag	acc	gtc	1056
Ala	Glu	Tyr	Lys	Ser	Asp	Tyr	Val	Tyr	Gln	Pro	Phe	Pro	Lys	Thr	Val	
340					345					350						
tgg	gag	cag	atc	ctc	aac	acc	tgg	ctc	gtc	aag	ccc	ggc	gcc	ggg	atc	1104
Trp	Glu	Gln	Ile	Leu	Asn	Thr	Trp	Leu	Val	Lys	Pro	Gly	Ala	Gly	Ile	
355					360					365						
atg	atc	ttc	gac	ccc	tac	ggc	gcc	acc	atc	agc	gcc	acc	ccg	gag	tcc	1152
Met	Ile	Phe	Asp	Pro	Tyr	Gly	Ala	Thr	Ile	Ser	Ala	Thr	Pro	Glu	Ser	
370					375					380						
gcc	acg	ccc	ttc	cct	cac	cgc	aag	ggc	gtc	ctc	ttc	aac	atc	cag	tac	1200
Ala	Thr	Pro	Phe	Pro	His	Arg	Lys	Gly	Val	Leu	Phe	Asn	Ile	Gln	Tyr	
385					390					395					400	
gtc	aac	tac	tgg	ttc	gcc	ccg	gga	gcc	gcc	gcc	gcg	ccc	ctc	tcg	tgg	1248
Val	Asn	Tyr	Trp	Phe	Ala	Pro	Gly	Ala	Ala	Ala	Ala	Pro	Leu	Ser	Trp	
405					410					415						
agc	aag	gac	atc	tac	aac	tac	atg	gag	ccc	tac	gtg	agc	aag	aac	ccc	1296
Ser	Lys	Asp	Ile	Tyr	Asn	Tyr	Met	Glu	Pro	Tyr	Val	Ser	Lys	Asn	Pro	
420					425					430						
agg	cag	gcg	tac	gca	aac	tac	agg	gac	atc	gac	ctc	ggc	agg	aac	gag	1344
Arg	Gln	Ala	Tyr	Ala	Asn	Tyr	Arg	Asp	Ile	Asp	Leu	Gly	Arg	Asn	Glu	
435					440					445						
gtg	gtc	aac	gac	gtc	tcc	acc	tac	gcc	agc	ggc	aag	gtc	tgg	ggc	cag	1392
Val	Val	Asn	Asp	Val	Ser	Thr	Tyr	Ala	Ser	Gly	Lys	Val	Trp	Gly	Gln	
450					455					460						
aaa	tac	ttc	aag	ggc	aac	ttc	gag	agg	ctc	gcc	att	acc	aag	ggc	aag	1440
Lys	Tyr	Phe	Lys	Gly	Asn	Phe	Glu	Arg	Leu	Ala	Ile	Thr	Lys	Gly	Lys	
465					470					475					480	
gtc	gat	cct	acc	gac	tac	ttc	agg	aac	gag	cag	agc	atc	ccg	ccg	ctc	1488
Val	Asp	Pro	Thr	Asp	Tyr	Phe	Arg	Asn	Glu	Gln	Ser	Ile	Pro	Pro	Leu	
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 ile Lys Lys Tyr
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<400> 6

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Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
 20 25 30

Pro Ser Val Leu Gly Gln Thr Ile Arg Asn Ser Arg Trp Ser Ser Pro
 35 40 45

Asp Asn Val Lys Pro Leu Tyr Ile Ile Thr Pro Thr Asn Val Ser His
 50 55 60

Ile Gln Ser Ala Val Val Cys Gly Arg Arg His Ser Val Arg Ile Arg
 65 70 75 80

Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu
 85 90 95

Gln Pro Glu Thr Phe Ala Val Val Asp Leu Asn Lys Met Arg Ala Val
 100 105 110

Trp Val Asp Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln
 115 120 125

Leu Gly Glu Leu Tyr Tyr Ala Ile Tyr Lys Ala Ser Pro Thr Leu Ala
 130 135 140

Phe Pro Ala Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Phe Ala
 145 150 155 160

Gly Gly Gly Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu
 165 170 175

Asn Val Ile Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp
180 185 190

Lys Lys Ser Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly
195 200 205

Gly Glu Ser Phe Gly Ile Val Val Ala Trp Gln Val Lys Leu Leu Pro
210 215 220

Val Pro Pro Thr Val Thr Ile Phe Lys Ile Ser Lys Thr Val Ser Glu
225 230 235 240

Gly Ala Val Asp Ile Ile Asn Lys Trp Gln Val Val Ala Pro Gln Leu
245 250 255

Pro Ala Asp Leu Met Ile Arg Ile Ile Ala Gln Gly Pro Lys Ala Thr
260 265 270

Phe Glu Ala Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Leu Met
275 280 285

Ser Ser Lys Phe Pro Glu Leu Gly Met Asn Pro Ser His Cys Asn Glu
290 295 300

Met Ser Trp Ile Gln Ser Ile Pro Phe Val His Leu Gly His Arg Asp
305 310 315 320

Ala Leu Glu Asp Asp Leu Leu Asn Arg Asn Asn Ser Phe Lys Pro Phe
325 330 335

Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Gln Pro Phe Pro Lys Thr Val
340 345 350

Trp Glu Gln Ile Leu Asn Thr Trp Leu Val Lys Pro Gly Ala Gly Ile
355 360 365

Met Ile Phe Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ser
370 375 380

Ala Thr Pro Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr
385 390 395 400

Val Asn Tyr Trp Phe Ala Pro Gly Ala Ala Ala Ala Pro Leu Ser Trp

405

410

415

Ser Lys Asp Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro
420 425 430

Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu
435 440 445

Val Val Asn Asp Val Ser Thr Tyr Ala Ser Gly Lys Val Trp Gly Gln
450 455 460

Lys Tyr Phe Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys
465 470 475 480

Val Asp Pro Thr Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro Pro Leu
485 490 495

Ile Lys Lys Tyr
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<223> undetermined amino acid

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<211> 14
<212> PRT
<213> Lolium perenne

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<210> 9
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<400> 9

Gly Leu Ile Glu Phe Pro Ala Gly Val
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<212> PRT
<213> Dactylus glomerata

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Asp Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys
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<210> 11
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<400> 11

Val Asp Pro Thr Asp Tyr Phe Gly Asn Glu Gln
1 5 10

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<212> PRT
<213> Dactylus glomerata

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Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln Leu Gly Glu Leu Ser
1 5 10 15

Tyr

<210> 13
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<400> 13

Gly Val Leu Phe Asn Ile Gln Tyr Val Asn Tyr Trp Phe Ala Pro
1 5 10 15

<210> 14
<211> 11
<212> PRT
<213> Cynodon dactylon

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Lys Thr Val Lys Pro Leu Tyr Ile Ile Thr Pro
1 5 10

<210> 15
<211> 22
<212> PRT
<213> Cynodon dactylon

<400> 15

Lys Gln Val Glu Arg Asp Phe Leu Thr Ser Leu Thr Lys Asp Ile Pro
1 5 10 15

Gln Leu Tyr Leu Lys Ser
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<210> 16
<211> 16
<212> PRT
<213> Cynodon dactylon

<400> 16

Thr Val Lys Pro Leu Tyr Ile Ile Thr Pro Ile Thr Ala Ala Met Ile
1 5 10 15

<210> 17
<211> 24
<212> PRT
<213> Cynodon dactylon

<400> 17

Leu Arg Lys Tyr Gly Thr Ala Ala Asp Asn Val Ile Asp Ala Lys Val
1 5 10 15

Val Asp Ala Gln Gly Arg Leu Leu
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<213> Cynodon dactylon

<400> 18

Lys Trp Gln Thr Val Ala Pro Ala Leu Pro Asp Pro Asn Met
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<210> 19

<211> 15

<212> PRT

<213> Cynodon dactylon

<400> 19

Val Thr Trp Ile Glu Ser Val Pro Tyr Ile Pro Met Gly Asp Lys
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<211> 19

<212> PRT

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<222> (8)..(8)

<223> undetermined amino acid

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Gly Lys Tyr

<210> 21

<211> 23

<212> PRT

<213> Cynodon dactylon

<400> 21

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Glu Pro Ile Pro Lys Lys Ser
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<210> 22

<211> 13

<212> PRT

<213> Cynodon dactylon

<400> 22

Tyr Arg Asp Leu Asp Leu Gly Val Asn Gln Val Val Gly
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<210> 23

<211> 15

<212> PRT

<213> Cynodon dactylon

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Ser Ala Thr Pro Pro Thr His Arg Ser Gly Val Leu Phe Asn Ile
1 5 10 15

<210> 24

<211> 36

<212> PRT

<213> Cynodon dactylon

<400> 24

Ala Ala Ala Ala Leu Pro Thr Gln Val Thr Arg Asp Ile Tyr Ala Phe
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Arg Asp Leu Asp
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<211> 149

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<213> Phleum pratense

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aaggaccccg tccaggccta cgccaacta 149

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<211> 299

<212> DNA

<213> Phleum pratense

<400> 26

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actacatgga gccatacgtg agcaagaacc ccaggcaggc ctacgccaac tacagggaca 120
 tcgacctcgg gaggaacgag gtggtgaacg acgtctccac cttcagcagc ggtttggtgt 180
 ggggccagaa atacttcaag ggcaacttcc agaggctcgc catcaccaag ggcaaggtgg 240
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<400> 27

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu Val
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Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
 20 25 30

Pro

<210> 28
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 <213> Phleum pratense

<220>
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<400> 28

Ser Ala Thr Pro Phe Xaa His Arg Lys Gly Val Leu Phe Asn Ile Gln
 1 5 10 15

Tyr Val

<210> 29

<211> 10
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<222> (3)..(8)
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<400> 29

Gly Leu Xaa Tyr Arg Xaa Leu Xaa Pro Glu
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<210> 30
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Lys Xaa Met Gly Asp Asp His Phe Xaa Ala Val Arg
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<210> 31
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<212> PRT
<213> Phleum pratense

<400> 31

Ala Pro Glu Gly Ala Val Asp Ile Ile
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<210> 32
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<400> 32

Met Glu Pro Tyr Val Ser Ile Asn Pro Val Gln Ala Tyr Ala Asn Tyr
1 5 10 15

<210> 33
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<212> PRT
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<222> (14)..(14)
<223> undetermined amino acid

<400> 33

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 34
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<212> PRT
<213> Phleum pratense

<400> 34

Leu Tyr Ala Lys Ser Ser Pro Ala Tyr Pro
1 5 10

<210> 35
<211> 33
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<222> (14)..(14)
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<400> 35

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu Val
1 5 10 15

Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
20 25 30

Pro

<210> 36
<211> 29
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<400> 36

Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu Val
1 5 10 15

Lys Glu Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro
20 25

<210> 37
<211> 15
<212> PRT
<213> Phleum pratense

<220>
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<400> 37

Tyr Phe Pro Xaa Xaa Ala Ala Lys Glu Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 38
<211> 15
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<222> (4)..(14)
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<400> 38

Tyr Phe Pro Xaa Xaa Ala Lys Lys Glu Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 39
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<220>
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<400> 39

Tyr Phe Pro Xaa Xaa Ala Ala Lys Asp Asp Phe Leu Gly Xaa Leu
1 5 10 15

<210> 40

<211> 11

<212> PRT

<213> Phleum pratense

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<222> (4)..(5)

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Tyr Phe Pro Xaa Xaa Leu Ala Asn Glu Asp Phe
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<210> 41

<211> 18

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<213> Phleum pratense

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<221> MISC_FEATURE

<222> (6)..(6)

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1 5 10 15

Tyr Val

<210> 42

<211> 10

<212> PRT

<213> Phleum pratense

<220>

<221> MISC_FEATURE

<222> (3)..(8)

<223> undetermined amino acid

<400> 42

Gly Leu Xaa Tyr Arg Xaa Leu Xaa Pro Glu
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<210> 43

<211> 12

<212> PRT

<213> Phleum pratense

<220>

<221> MISC_FEATURE

<222> (2)..(9)

<223> undetermined amino acid

<400> 43

Lys Xaa Met Gly Asp Asp His Phe Xaa Ala Val Arg
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<210> 44

<211> 9

<212> PRT

<213> Phleum pratense

<400> 44

Ala Pro Glu Gly Ala Val Asp Ile Ile
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<210> 45

<211> 16

<212> PRT

<213> Phleum pratense

<400> 45

Met Glu Pro Tyr Val Ser Ile Asn Pro Val Gln Ala Tyr Ala Asn Tyr
1 5 10 15

<210> 46

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<212> DNA

<213> Phleum pratense

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<221> misc_feature

<222> (1)..(29)

<223> 'n' means inosin

<400> 46
ytntaygcna arwsnwsncc ngcntaycc

29

<210> 47
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<212> DNA
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<223> 'n' means inosin

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caymgnaarg gngtnytntt yaayatmc

28

<210> 48
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<212> DNA
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<220>
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<222> (1)..(26)
<223> 'n' means inosin

<400> 48
tarttngcrt angcytgnac nggrtt

26

<210> 49
<211> 23
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<400> 49
actactgggtt cgccccggga gcc

23

<210> 50
<211> 28
<212> DNA
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<400> 50
tgaagtattt ctggccccac accaaacc

28

<210> 51
<211> 24
<212> DNA
<213> Phleum pratense

<400> 51
cccttggtga tggcgagcct ctgg

<210> 52
<211> 23
<212> DNA
<213> Phleum pratense

<400> 52
ctcagtcctg gggcagacca tcc

24

23